

Greater Suttle Lake Vegetation Management Project Fisheries Report and Biological Evaluation/Assessment

Nate Dachtler
Fisheries Biologist

Deschutes National Forest
Sisters Ranger District

LOCATION

T13S, R8E, See Map (Appendix 1)
Suttle Lake, Scout Lake, Dark Lake, Camp Tamarack and Methodist Camp, Deschutes National Forest, Sisters Ranger District

Aquatics Existing Condition

The project includes vegetation treatments associated with campgrounds, group camps, day use areas and roadsides around Suttle Lake, Scout Lake and Dark Lake and the lower end of Link Creek. In general riparian vegetation is in good condition around these waterbodies. Some small areas lack vegetation and are associated with campsites, boat ramps, docks and day use areas. In Suttle Lake and Lake Creek fish species include brown trout, brook trout, kokanee, bull trout, mountain whitefish, longnose dace, sculpins and smallmouth bass. All of these species have been observed or sampled in Link Creek with the exception of smallmouth bass and bull trout. Scout and Dark Lakes do not contain any fish species and there are no streams that connect these lakes with Suttle Lake. Connectivity is good due to past fish passage projects on Lake Creek, the outlet of Suttle Lake and Blue Lake. Both Link Creek and Lake Creek are 303-d listed for temperature and this is due to both streams being fed by lake surface waters which warm during the summer. Flows in these streams remains unaltered with the exception of a few small diversions located on Lake Creek several miles downstream of the project. Water quality in all three lakes is generally good but Suttle Lake does experience blooms of blue green algae which elevates chlorophyll and pH levels during these blooms which usually occur once or twice per year during the summer and fall. Past testing of these blooms has not found toxins above levels considered to be harmful to the people or animals (USFS data on file). Known aquatic invasive species found in Suttle Lake are eurasian watermilfoil and the european earsnail. All three lakes have high amounts of recreational use. Two small National Inventoried Wetlands exist in Link Creek Campground. One is a freshwater emergent wetland (1.14 ac.) connected to Suttle Lake and the other is an isolated freshwater forest shrub wetland (0.41 ac.) A stream habitat inventory done on Link Creek found instream habitat to be in good condition but was lacking in large wood with less than 20 pieces per mile (Dachtler 1997). A project to add large wood to the entire length of Link Creek is planned for 2020 but is not analysed under this project.

Management Direction

The Action Alternative meets all applicable standards and guidelines in the Deschutes National Forest Land and Resource Management Plan (LRMP) (USDA Forest Service 1990) as amended by the Record of Decision for Amendments to the Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl (Northwest

Forest Plan) (USDA and USDI 1994). Portions of the project are located in Riparian Reserves as designated by the NFWP (Northwest Forest Plan). The following standards and guidelines are applicable to the project:

Deschutes Land and Resource Management Plan Standards and Guidelines

The following standards and guidelines from the Deschutes Land and Resource Management Plan are most applicable to the project:

Fisheries (FI-4) Habitat improvement work will be pursued based on the contribution of the work to fishery objectives and targets. Improvement work will adopt measures to protect other resources as needed.

Riparian (RP-2) Maintain or enhance riparian areas and the riparian dependent resources (water quality and quantity, fish, and certain wildlife and vegetation that owe their existence to riparian areas) associated with these areas.

Riparian (RP-4) Manage riparian areas under the principles of multi-use and sustained yield, while emphasizing the protection of riparian dependent resources. Outputs of non-riparian dependent resources (timber harvest, grazing, recreation, special uses) can be pursued as long as they do not conflict with the objectives and needs of riparian dependent resources.

Riparian (RP-5) Identify and pursue opportunities in riparian areas for enhancement of fisheries and wildlife habitat.

Riparian (RP-10) Manage woody debris and riparian vegetation to: 1) maintain or enhance stream channel and bank structure, and 2) provide structural fish habitat to meet objectives for resident fish populations provided for in the forest plan.

Riparian (RP-17) Roads and trails will be at the lowest density which meets long term resource needs. Where existing roads or trails are inhibiting the achievement of fisheries or water quality objectives, measures shall be taken to eliminate the problem.

Riparian Areas (RP-20) Heavy equipment may be used in the riparian ecosystem if their use would maintain or improve riparian dependent resources. The use of heavy equipment may be allowed in the transition ecosystems if achievement of vegetative, soil and water objectives are met.

Compliance with the Northwest Forest Plan: Key Watersheds and Riparian Reserves

The NFWP provides standards and guidelines for Key Watersheds and Riparian Reserves (RRs) that prohibit or regulate activities that retard or prevent attainment of the ACS Objectives at the watershed scale (see below). Key watersheds under the NFWP contribute directly to the conservation of the threatened bull trout and resident fish populations (USDA and USDI 1994).

The Suttle Lake Vegetation Management Project will comply with the Riparian Reserve and Key Watershed standards and guidelines in the NFWP. Key watersheds have the highest priority for watershed restoration and watershed analysis is required to set priorities for restoration. Based on

the evaluation of the short-term, long-term, and cumulative effects, the Suttle Lake Recreation Project is designed to “contribute to maintaining the fifth-field watershed over the long-term.”

The following standards and guidelines apply to the project:

(WR-1) Design and implement fish and wildlife habitat restoration and enhancement activities in a manner that promotes long term ecological integrity of ecosystems, conserves the genetic diversity of native species and attains Aquatic Conservation Strategy objectives.

(WR-3) Do not use mitigation or planned restoration as a substitute for preventing habitat degradation.

(FW-1) Design and implement fish and wildlife restoration and enhancement activities in a manner that contributes to the attainment of Aquatic Conservation Strategy objectives.

(RA-2) Fell trees in riparian reserves when they pose a safety risk. Keep felled trees on site when needed to meet coarse wood debris objectives.

(RM-1) New recreational facilities within Riparian Reserves, including trails and dispersed sites, should be designed to not prevent meeting the Aquatic Conservation Strategy objectives. Construction of these facilities should not prevent the future attainment of these objectives. For existing recreation facilities within Riparian Reserves, evaluate and mitigate impacts to ensure that these do not prevent, and to the extent practical contribute to, attainment of Aquatic Conservation Strategy objectives.

(RM-2) Adjust dispersed and developed recreation practices that retard or prevent attainment of Aquatic Conservation Strategy objectives. Where adjustment measures such as education, use limitations, traffic control devices, increased maintenance, relocation of facilities, and/or specific site closures are not effective, eliminate the practice of occupancy.

Compliance with the Aquatic Conservation Strategy

An essential piece of the Northwest Forest Plan is the Aquatic Conservation Strategy (ACS) which “was developed to restore and maintain the ecological health of watersheds and aquatic ecosystems contained within them on public lands” (USFS 1994, B-9). Management activities proposed for watersheds must meet the nine ACS objectives as specified in the Northwest Forest Plan (pages C31-C38). This section discusses how the Greater Suttle Lake Vegetation Management Project addresses the intent of the Aquatic Conservation Strategy Objectives of the Northwest Forest Plan and complies with the ACS for hydrologic functions, fisheries habitat and wildlife habitat.

ACS Objective 1: Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features to ensure protection of the aquatic systems to which species, populations and communities are uniquely adapted.

Riparian vegetation, wetlands, lakeshores and stream channels will be protected by Project Design Criteria (PDC) and Best Management Practices (BMPs) that minimize the amount of disturbance that occurs from proposed activities. Some trees would be felled and left in the lakes and on the ground surfaces to serve as aquatic habitat, upland nurse logs and deterrence for new trail formation around recreational sites. Trees resistant to the mistletoes and root rots in the project area will be planted as green tree replacements where hazardous or infected trees are removed to

improve forest health over the long term. Riparian no-treatment buffers in areas outside of campground, group camps and roadside treatment areas will help ensure future large wood recruitment to waterbodies and the ground within the Riparian Reserve of the respective lakes and stream in the watershed. As a result, the distribution, diversity, and complexity of aquatic and riparian habitat components to which riparian dependent species have adapted would be maintained at the landscape scale and restored over time at the watershed scale.

The Suttle Lake project would treat stands in high public use areas within the Lower and Upper Lake Creek subwatersheds where some of the distribution, diversity and complexity of large tree habitat features have been compromised by roads, trails and campground infrastructure. Approximately 400 hazard or danger trees would be removed from within the Riparian Reserves in the project area and approximately 40 would be felled into lakes or onto the ground surface to improve aquatic habitat and function as coarse woody debris nurse logs. A much smaller number of trees would be removed from the buffer along the stream channel of Link Creek and trees felled within the buffer on the south side of the creek would be left on the ground to provide some shade over the channel. The short term reduction of standing trees would have little impact to overall stand structure within the Riparian Reserve with treatments reducing average basal area per acre from 170 to 124 in the campground and roadside areas. This level is within the Management Zone range for the Grand fir/twin flower plant association on site and provides sufficient canopy and stand structure to support riparian dependent species in the area. In addition, the project is relatively small in scale and would leave approximately 56% of the Riparian Reserves in the sixth field Lake Creek subwatershed untreated. Untreated stands in the rest of the Riparian Reserve would continue to provide stand structure with upwards of 200 BA per acre.

ACS Objective 2: Maintain and restore spatial and temporal connectivity within and between watersheds. Lateral, longitudinal, and drainage network connections include flood plains, wetlands, upsweep areas, headwater tributaries, and intact refugia. These network connections must provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species.

Impacts to the spatial and temporal connectivity within the Upper Metolius fifth field watershed would be minimized by PDCs and BMPs designed to reduce direct impacts to riparian vegetation and the small scale of the project. A majority of the Riparian Reserve in and around the project area would remain untreated and continue to provide lateral and longitudinal connectivity around the lakes and between riparian areas. Some of the trees felled within the first 100 feet from the respective lake shores would be left on the ground to improve aquatic habitats where they are currently lacking or directionally felled to help reduce the impacts on riparian vegetation during their removal. Treated stands throughout the Riparian Reserve would have an average of 124 BA per acre remaining on site which is just above the Lower Management Zone for the Grand fir/twinflower plant association. Stand structures would still be capable of providing access and habitat for riparian dependent species such as cavity nesting waterfowl to and from the lake. As a result, the network connections provided by riparian and forest vegetation for riparian dependent species would be maintained in the treated areas.

Past fish passage projects have been implemented in the watershed and now allow unrestricted access for fish and aquatic species from the Metolius River to Blue Lake. This project would not affect network connections that provide routes for aquatic and riparian dependent species between waterbodies and allow them to fulfill life history requirements. This project would maintain connectivity between and within watersheds because the project is small in scale and would only occur in areas that are intensely managed such as campgrounds, group camps and along

roadways. It is expected that the lateral, longitudinal, and drainage network connections would be maintained in a functional condition as a result of this project.

ACS Objective 3: Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.

PDCs and BMPs are in place to protect and maintain the physical integrity of the aquatic systems by restricting equipment access within 100 feet of the lake and stream waterbodies to existing areas of impact. No project activities are proposed that detrimentally change the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations from current conditions. Trees felled into lakes and the Riparian Reserves would benefit the physical integrity of the aquatic systems by improving habitat and cover for species associated with riparian vegetation and aquatic features. Some trees would be strategically placed in campgrounds to provide downed wood habitat and deter the creation of new trails that can impact riparian vegetation. Restricted machine access along Link Creek would maintain the physical integrity of this stream in its current state. It is expected that no detrimental changes to the physical integrity of aquatic systems would occur from activities proposed in this project.

ACS Objective 4: Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain within the range that maintains the biological, physical, and chemical integrity of the system and benefits survival, growth, reproduction, and migration of individuals composing aquatic and riparian communities.

The two primary measures of potential water quality effects from the project are changes in fine sediment (or turbidity) and shade to waterbodies within the project area. The project incorporates PDC and BMPs to maintain water quality and limit soil disturbance from the proposed activities. PDCs include restrictions on equipment off already compacted surfaces within 100 feet of waterbodies and the exclusion of decks and landings from within 200 feet of the stream or lake edge if they are not on existing disturbed or compacted surfaces. This minimizes potential disturbance of surface soils and vegetation within this buffer and reduces the probability of mobilizing sediment to waterbodies. The topography within the treatment areas has minimal drainage features and soils have high infiltration rates that minimize potential overland flows capable of detaching sediment and carrying it directly into Link Creek or the lakes in the area. In addition, haul would mainly occur on paved or primary forest service roads and no fording of stream channels would occur. See also the discussion of treatments and effects within Riparian Reserves under ACS objective # 5.

Water temperatures is also not expected to be affected as the result of this project. Lake Creek and Link Creek are on the state 303(d) list for exceeding water temperature standards for bull trout spawning and rearing with exceedences occurring downstream of Suttle and Blue Lakes due to the warmer lake surface waters feeding them. The felling of an estimated 150 live trees along nearly two miles of Suttle Lake shoreline would reduce shade slightly in the short term but is unlikely to have a measurable affect on the solar input to the 250 acre waterbody (see Hydrology report). The hydrology assessment found that effects to water quality from management activities as a result of the project would be indistinguishable from background levels. As a result, water quality would remain within the range that maintains the biological, physical, and chemical integrity of the Upper Metolius Watershed and the reproduction and migration of individuals composing aquatic and riparian communities would not be detrimentally affected by this project.

Detrimental effects to riparian, aquatic, and wetland ecosystems in the Upper Metolius watershed are not expected to occur from this project.

ACS Objective 5: Maintain and restore the sediment regime under which aquatic ecosystems evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.

Sediment regimes for the lake waterbodies and the Link Creek stream channel are not expected to be altered by the proposed project. Although vegetation treatments include the felling and removal of trees from within the Riparian Reserves, some of which are within 100 feet of the waterbodies, PDCs and BMPs are in place to minimize disturbance incurred from the felling, yarding, processing and haul of this material off site. High infiltration rates of the cindery soils in the area greatly limit the potential for overland flow in this area (see soils report) and areas disturbed for landings and skid trails within the Riparian Reserve would be rehabilitated and re-planted to minimize the potential for generating sediment during rain storms. New landings would be located on the outer edge of the Riparian Reserves on relatively flat ground and other landings would be restricted to existing compacted areas (i.e. parking areas or campsites). Haul would occur on existing road surfaces and no stream fords are proposed under this project. In addition, sediment input to Link Creek from upstream sources would not be affected by this project and restricted machine travel within 100 feet of the channel would maintain the physical integrity of the riparian vegetation and soil surface so that the majority of sediment generated during rain events would be trapped before reaching the channel.

The connected action of burying powerlines to and within Camp Tamarack would have little chance to increase sedimentation to Dark Lake because it would be buried alongside or underneath existing roads and pathways and vegetated buffers exist on low gradient slopes between these areas and the lake. Disturbed ground outside of roads and pathways would be rehabilitated with organic cover and seeded to minimize the exposure of mineral soil. As a result, the timing, volume, rate, and character of sediment input, storage, and transport would be maintained similar to current conditions for the waterbodies within the project area and the Upper Metolius fifth field watershed.

ACS Objective 6: Maintain and restore in-stream flows sufficient to create and restore riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration and spatial distribution of peak, high, and low flows must be protected.

Link Creek is the only perennial stream within the project area and PDCs and BMPs are in place to minimize ground disturbance from the proposed treatments. Machine traffic within 100 feet of the channel would be restricted to existing compacted areas in order to minimize new soil disturbance and protect riparian vegetation. A few trees within 100 feet of the stream may be removed but the topography of the campground is relatively flat and overall disturbance of the soil surface and riparian vegetation would be relatively minimal.

Upland treatments elsewhere in the Riparian Reserve would have little effect on overland flows reaching Link Creek. Proposed treatments would not create large openings and are not expected to result in an increase of snowpack or a measurable reduction in interception and evapotranspiration. Seasonal runoff is not expected to increase due to the high infiltration rates of the cindery soils in the area and existing vegetation and forest litter would remain on site to buffer and filter overland flows should they occur. Winter and spring high flows that could cause significant erosion are not expected to increase or be concentrated in intermittent or perennial

streams. Ephemeral streams in the area are also unlikely to be affected by the proposed treatments and do not have direct connections to Link Creek. The ephemeral stream that flows out of Dark Lake does not have a surface connection to Suttle Lake and no increases or changes in streamflow are expected to Lake Creek which starts at the outlet of Suttle Lake. As a result, the project would not lead to a negative effect on streamflow and in-stream flows would be maintained in the Link Creek channel.

ACS Objective 7: Maintain and restore timing, variability, and duration of flood plain inundation and water table elevation in meadows and wetlands.

As described under ACS Objective 6 vegetation treatments in the project area are not expected to increase overland flow and incur negative effects to the streamflow of Link Creek. The natural flow regime of Link Creek is dependent on melt rates of the seasonal snowpack and rainfall events that would not be affected by this project. Compaction of upland and wetland soils would not be significant and changes in flow are not expected due to the small size of the project in relation to the subwatershed. As a result, it is expected that the timing, variability and duration of floodplain inundation along Link Creek would be maintained at pre-project levels. Water level changes of Suttle, Dark and Scout lakes are also dependent on the melt rates of the seasonal snowpack and rainfall are not expected to be affected by the project. The water table elevation in the wetland located in the Link Creek campground would also be maintained at pre-project levels due to the buffer restricting machine travel around the wetland and the lack of impact to the flow regime of Link Creek or the water levels of Suttle Lake.

ACS Objective 8: Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distribution of coarse woody debris sufficient to sustain physical complexity and stability.

The removal trees within campgrounds and group camps located in the Riparian Reserve are not expected to result in detrimental changes to riparian habitats in the subwatersheds affected. As discussed in ACS Objectives 1 and 2, stand structure would not be altered enough to change the function of riparian and upland vegetative communities as habitat for aquatic and riparian dependent species. Trees felled into the lakes and on the ground within the proposed treatment areas would improve hiding cover in aquatic habitats, maintain down wood on the ground and bolster the amount of wood that currently exists in Suttle, Dark and Scout lakes from the B and B fire, past habitat projects and natural infall. Planted trees and untreated areas around these waterbodies will ensure wood recruitment continues into the future.

The project includes buffers along all perennial or intermittent riparian corridors and wetlands. These buffers vary depending on location and encompass diverse riparian plant communities. Minimizing disturbance within the first 100 feet of the lakes and Link Creek will protect thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration within the subwatershed. Felling tree into the lakes and on the ground will supply and distribute coarse woody debris in amounts sufficient to sustain physical complexity and stability in these areas.

ACS Objective 9: Maintain and restore habitat to support well-distributed populations of native plant, invertebrate and vertebrate riparian-dependent species.

PDCs and BMPs are included for project implementation to help maintain habitat conditions for species associated with Riparian Reserves and waterbodies. Impacts to riparian vegetation and wetlands would be minimized by restricting machine travel within 100 feet of waterbodies to existing areas of disturbance. Directional hand felling of large trees and suspended yarding within the riparian buffer would also reduce impacts to riparian vegetation and the soil surface. Limiting landings in Riparian Reserves to at least 200 feet from waterbodies if not on existing disturbed or compacted areas in campgrounds, group camps, roads and parking areas will help protect riparian areas and maintain the existing riparian conditions.

The Suttle Lake project also contributes to restoration of habitat for riparian-dependent species by adding trees to lake shore habitats in certain locations where it is currently lacking and contributing downed wood to the ground surface. Although some species may currently avoid these areas due to the high amount of disturbance that occurs during the recreation season, habitats for species that currently use the Riparian Reserves associated with these areas of high public use would be enhanced.

Buffers along riparian areas would help maintain the existing microclimates which are especially important for amphibian and vegetative species that are extremely sensitive to changes in temperature and humidity, as well as for species that use the riparian areas as travel corridors. Riparian areas contribute to the landscape heterogeneity of both untreated and treated stands and the retention of riparian plant species and live and dead trees provides for different stocking levels and species composition across the Riparian Reserve. Stand conditions vary around the waterbodies and only a small portion of the Riparian Reserves within the watershed would be treated in order to maintain a diverse range of habitats on the landscape capable of supporting numerous plant and animal species. As a result, the project provides for the maintenance of habitat conditions within the riparian areas and across the landscape and supports well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species at the project and watershed scale.

Statement of Consistency with ACS Objectives

Overall, the project would maintain riparian vegetation and aquatic conditions within the Upper and Lower Lake Creek sixth field subwatersheds by retaining existing riparian vegetation and adding downed wood within the Riparian Reserves. Although the project would remove trees from stands in the Riparian Reserves, stand structure would not be altered to the degree that use by riparian dependent and upland species would be measurably affected. Designated buffers along all waterbodies would limit machine traffic and the rehabilitation and re-vegetation of disturbed areas like landings and skid trails would combine to protect and maintain riparian vegetation, connectivity, water flow, water quality, and habitat at the local sixth field subwatershed scales.

Although the project includes activities that would disturb cover on the soil surface, sediment production at individual sites is expected to be minimal. Negative water quality impacts are anticipated to be small, short-term, and localized should they occur due to the restriction of machine traffic within riparian buffers and the rehabilitation of landings and skid trails within the Riparian Reserve. Any sediment production or turbidity in the short term is expected to be well within the range of typical levels during normal high flows or storm events. Changes in water quality, turbidity or sediment production would not be detectable at the project or watershed scale.

In summary, the activities described for the Greater Suttle Lake Vegetation Management project are consistent with the ACS objectives. The project is designed to remove hazard trees in areas of high public use but will also improve forest health in stands affected by insect and disease and “contribute to maintaining or restoring the fifth-field watershed over the long-term.” PDCs and BMPs are in place for implementation to help maintain aquatic function, connectivity corridors for wildlife species and watershed and landscape scale features such as wetlands, shorelines, riparian vegetation stream banks and normal floodplain inundation. The proposed project contributes to ACS objectives by helping maintain and/or restore landscape diversity, connectivity, streambank integrity, water quality, the natural sediment regime, floodplain variability, plant communities and habitat in the Upper Metolius Watershed. The physical integrity of nearby aquatic systems and water quality would be maintained following the project. Based on the evaluation of the short-term, long-term, and cumulative impacts the project would be consistent with the nine ASC objectives.

Other Planning Documents

Metolius Watershed Analysis

The Metolius Watershed Analysis and Update (USDA Forest Service 1996 and 2004) for Landscape Area 7 (Suttle Lake) recommend:

- Follow up and continue riparian restoration around the lake and in the campgrounds.
- Water Quality – Monitor Suttle Lake at intervals to track changes in water quality and the algae bloom and to assess the degree of recovery.

Project Design Criteria (PDC)

The following applicable recreation PDC from the Ochoco and Deschutes NF’s Aquatic and Terrestrial Programmatic Biological Assessment (USDA Forest Service 2014) will be used for felling trees in Suttle Lake where bull trout critical habitat is present.

- Do not remove standing/down wood from RHCA’s and Riparian Reserves unless health and safety and/or forest health issues require treatment (as determined and confirmed by district silviculturalist and fisheries biologist) to meet Aquatic Conservation Strategy or Riparian Management Objectives. Danger trees may be removed from RHCA’s and Riparian Reserves if needed to allow for the normal operation of the recreation/special use site, or if a liability issue arises. Danger trees within the RHCA’s and Riparian Reserves that represent an opportunity for topping for wildlife needs should be retained as snags.
- Do not retard attainment of coarse down woody debris objectives within RHCA’s and Riparian Reserves as determined by vegetation type within the immediate project site.
- Do not retard attainment of in-stream wood objectives established in watershed analysis. If a watershed analysis is not completed and current, the project will not retard attainment of a minimum of 20 pieces of large wood per mile that are at least 12 inches in diameter and 35 feet in length (PacFish/Infish RMO).

The following PDC for aquatics apply to vegetation management (all other) portions of the project. Forest Service BMPs also apply and shall be followed for this project (USDA Forest Service 2012):

Riparian Reserve Project Design Criteria (PDC)

- Restrict ground-based equipment to existing compacted surfaces within 100 feet of lakes, streams, or wetlands (Units 1, 2, 3, 4, 6, and 9). Fully or partially suspend trees removed from these areas. Hazard trees within 100 ft of lakes in Units 5a, 7 and 8 could be removed by allowing a single out-and-back pass by machinery (“ghost trail”). Fell and leave trees for aquatic habitat and coarse woody debris that cannot be removed without excessive damage. End lining is allowed if the tree can be partially suspended from the large end.
- Landings would only be allowed in already disturbed or compacted areas in Riparian Reserves or with approval from hydrologist or fish biologist for landings located at least 200 ft. from lakes or streams on flat ground (All Units).
- Locate hand burn piles at least 100 feet away from live and intermittent stream channels and lakes and outside of riparian vegetation, whichever is greatest. Do not locate burn piles in swales, washes, or depressions (Unit 9).
- Hand burn piles should not cover more than 5% of the area within RRs and should be less than 100 ft² (Unit 9).

Aquatic Project Mitigations

Vegetation Management

- Decommission all skid trails and landings in Riparian Reserves (may include subsoiling) and plant and seed with native species (All Units).
- Identify with fish biologist and recreation specialist approximately 30 trees to be felled into Suttle Lake from Blue Bay Campground, South Shore Campground, or Link Creek Campground (Units 1, 2 & 3), 5 trees into Scout Lake (Unit 4), and 5 trees into Dark Lake (Unit 6) as a mitigation for removing trees from the large wood recruitment areas (160 ft. from the lakes).
- In the Link Creek primary shade producing area (within 100 ft. of Link Creek on the south side) fell towards the creek and leave any live trees proposed for treatment to provide some solar cover (Unit 1).
- Strategically fell some of the trees within 100 ft. of waterbodies to reduce user created trails, define campsites, or provide filtering for upslope runoff (Units 1, 2, 3, 4, 5 & 6).

Buried Powerline at Camp Tamarack

- Rehabilitate the trench line by covering with debris to prevent it from concentrating overland flow or becoming a trail if not located in roadway, ditch line or high use area.
- Avoid trenching where it would require the cutting of lake shore trees or major tree roots of lake shore trees.
- Seed area disturbed by powerline with native grass seed mix if not in roadway or high use areas.

BIOLOGICAL EVALUATION/ASSESSMENT
And
EFFECTS ANALYSIS
For
AQUATIC THREATENED, ENDANGERED, and SENSITIVE (TES) SPECIES

Sisters Ranger District
Deschutes National Forest

Greater Suttle Lake Vegetation Management Project

Prepared by: /s/ **Nate Dachtler**
Nate Dachtler
Fishery Biologist

Date: September 3, 2019

Approved by: /s/ **Michael Riehle**
Michael Riehle
District Fishery Biologist

Date: September 3, 2019

SUMMARY

The following (table 1) displays the threatened, endangered and sensitive (TES) species considered in the analysis of the Suttle Lake Recreation Project.

Table 1. Aquatic species and effects for this project.

Species	Scientific Name	Status	Occurrence	Effects Determination
Aquatic Species				
Columbia River Bull Trout (vegetation management portion of project)	<i>Salvelinus confluentus</i>	T	D	NE
Columbia River Bull Trout (Tree felling into Suttle Lake)	<i>Salvelinus confluentus</i>	T	D	NLAA
Bull Trout Critical Habitat	<i>Salvelinus confluentus</i>	T	HD	BE
Interior Redband Trout	<i>Oncorhynchus mykiss</i> ssp.	S	S	NI
A Caddisfly	<i>Rhyacophila chandleri</i>	S	HN, N	NI
Zig zag darner	<i>Aeshna sitchensis</i>	S	HN, N	NI

Status

E	Federally Endangered
T	Federally Threatened
S	Sensitive species from Regional Forester's list
C	Candidate species under Endangered Species Act
MS	Magnuson-Stevens Act designated Essential Fish Habitat

Occurrence

HD	Habitat Documented or suspected within the project area or near enough to be impacted by project activities
HN	Habitat Not within the project area or affected by its activities
D	Species Documented in general vicinity of project activities
S	Species Suspected in general vicinity of project activities
N	Species Not documented and not suspected in general vicinity of project activities

Effects Determinations

Threatened and Endangered Species

NE	No Effect
NLAA	May Effect, Not Likely to Adversely Affect
LAA	May Effect, Likely to Adversely Affect
BE	Beneficial Effect

Sensitive Species

NI	No Impact
MIIH	May Impact Individuals or Habitat, but Will Not Likely Contribute to a Trend Towards Federal Listing or Cause a Loss of Viability to the Population or Species
WIFV	Will Impact Individuals or Habitat with a Consequence that the Action May Contribute to a Trend Towards Federal Listing or Cause a Loss of Viability to the Population or Species
BI	Beneficial Impact

Biological Assessment

Middle Columbia River Bull Trout - *Salvelinus confluentus* USFWS Threatened Species

Existing Condition

The Metolius bull trout population continues to recover since listing in 1988, with redd counts peaking in 2004 at over 1,000 redds with a recent drop in redds after the peak to 382 redds in 2008 (data on file). After 2008 the number of redds ranged from around 500 to 600 redds each season with 590 redds counted in 2018. Continued protection of the spawning population made through restrictive angling regulations in the entire watershed has resulted in this recovery. The Metolius River/Lake Billy Chinook bull trout is a sub-population of the Deschutes Recovery Unit and is healthy as stated by Ratliff and Howell (1992) and Buchanan et al. (1997). The Metolius bull trout population is the only population with an allowable angler harvest in the state of Oregon. Oregon Department of Fish and Wildlife regulations allow one bull trout over 24 inches to be harvested daily on Lake Billy Chinook.

Bull trout spawn in most perennial tributaries of the Metolius River and in the mainstem between Jack Creek and Canyon Creek. Recent surveys have found bull trout are expanding spawning habitat to include Spring Creek, and the Metolius River upstream of Lake Creek. Additional rearing only habitat includes Brush Creek, Abbot Creek, Street Creek and Lower Lake Creek.

Bull trout are associated with a range of habitat types depending on life history strategy and age. Juvenile bull trout are closely associated with headwater streams, preferring water temperatures <13°C (Fraley and Shepard 1989; Rieman and McIntyre 1993). Subadults typically emigrate from these natal headwater streams to large bodies of water such as lakes, large rivers and reservoirs where they live and feed until age five when spawning migrations occur to their natal stream. The bull trout spawning migration begins in late May and June as they stage at the mouth of the Metolius River and begin moving upstream. Spawning can start in the middle of August but mainly occurs in September and is completed by the middle of October. For a more comprehensive life history of the Metolius bull trout population see (Riehle and Nolte 1992).

Historically bull trout inhabited Lake Creek and Suttle Lake. Lake Creek is likely only used for foraging as the water is too warm for spawning. Lake Creek has warm water temperatures in the summer because it is primarily surface water from Suttle Lake. Bull trout likely use this portion of Lake Creek on a limited basis during spring, fall or winter for foraging or rearing. Spawning is not suspected in Link Creek or Lake Creek due to unsuitable habitat conditions (high water temperature) because both streams are fed with lake surface water (Dachtler 1997, Riehle 1993). Bull Trout were recently caught in the spring of 2018 by an angler fishing in Suttle Lake. Bull trout access to Suttle Lake and Blue Lake from the Metolius River is now possible since all passage barriers have been removed or modified. These are the first bull trout documented in the lake since 1961 (Fies et al. 1996). The entire length of Link Creek was night snorkeled in August of 2018 and no bull trout were observed (USFS data on file). Water samples were collected in 2018 by USFWS (Bend office) from Link Creek and Lake Creek and sent in for eDNA analysis. Results detected bull trout presence in Lake Creek at the outlet of Suttle Lake but did not detect their presence in Link Creek. Suttle Lake and Link Creek is identified as bull trout critical habitat due to their historical and recent presence.

Effects to Bull Trout and Critical Habitat

Alternative 1 – No Action

There are no expected changes to bull trout habitat from current conditions. No work will be done and no individuals or habitat will be disturbed. However, due to removal of instream barriers during past projects individuals are not limited in their upstream migration from the Metolius River should bull trout utilize Suttle Lake, Link Creek or Blue Lake more in the future.

Alternative 2 – Proposed Action

The proposed action would create some disturbance in the Riparian Reserve where trees will be removed in and around campgrounds to abate danger trees and improve forest health in the long term from insect and disease issues (See Forest Insect and Disease Evaluation) (Oblinger and Flowers 2019). These activities would mainly be on already disturbed and compacted areas within the campgrounds. Following these activities some fine sediment could be generated following significant rain events in the first 1-2 years following the project. Soils in the area are blue lake cinders which have very high infiltration rates (See soils report) so significant overland flow is not expected and will likely not be more than what is already generated from compacted and paved areas associated with the campgrounds. Due to the campgrounds being located in Riparian Reserve some landings will be allowed in the Riparian Reserve but these will be required to be 200 ft. or more away from the lake and on relatively flat topography. These landings will be restored by seeding and planting with native species following the project. The Vegetated buffers between these landings and the lake, the porous soils and relatively flat ground will ensure these landings do not generate fine sediments through overland flow that could reach the lake. If small amounts of fine sediment do enter the lake from project activities these would settle along the shoreline adjacent to campgrounds. Increased turbidity is not expected at levels that would be noticeable or measureable. A small amount of spawning occurs in the Mainstem Metolius River below Lake Creek about 6 miles away but the majority of bull trout spawning occurs in other spring fed tributaries to the Metolius River. Because there is expected to be little to no increase in overland flow or fine sediment associated with project and the long distance to spawning areas there would not be any changes to spawning gravel quality in Lake Creek or the Metolius River.

In and around campgrounds some trees will be removed that provide shade and could provide future wood recruitment to the lake. Due to the large lakes size and mixing from wave action the reduction in shade is not expected to increase lake surface temperatures or temperatures in Lake Creek (see Hydrology report). Along Lower Link Creek only a hazard trees would be removed that provide little shade but because a large number of mature trees would be left in this location and essentially canopy cover would not be reduced at this location no change to overall shade along this portion of Link Creek is expected. To mitigate the removal of trees in Riparian Reserves associated with campgrounds at least 30 trees would be felled and left in Suttle Lake to provide habitat on shorelines adjacent to campgrounds and day use areas. Overall there is an abundance of large wood in the Lake mainly as a result of the B and B fire but also natural windfall has added to this as well. Lakeshore areas adjacent to campgrounds have had trees added in the past from hazard tree abatement and to protect areas of the trail that experience erosion from wave action. These trees provide additional habitat along the shoreline adjacent to campgrounds. Should bull trout be present and foraging in the Lake when trees are felled to provide habitat it could generate some disturbance but this is highly unlikely as bull trout use in the lake is low and bull trout prey in the lake are likely kokanee and mountain whitefish which

prefer deeper lake habitats during the daytime when the trees would be felled. Buechamp and Van Tassel (2001) found bull trout in Lake Billy Chinook primarily preyed on kokanee during the fall and secondarily winter – spring with other salmonids including whitefish during winter, spring and summer. Trees falling in the lake also a natural occurrence, mainly during wind events and this project activity is not expected to detrimentally change bull trout feeding behaviors should they be present.

Some precommercial thinning by hand would also occur in one Riparian Reserve unit to promote large tree development and reduce fuels. This is not expected to be ground disturbing but some small areas could be devegetated where hand pile burning may occur. Size of piles in these areas will be limited in size and would be located 100 ft. or more from the lake (See PDCs). The small size of these piles, the high infiltration rate of soils and the vegetated buffers between them and the lake would ensure that fine sediments would not enter the lake. This vegetation management portion of this project would not negatively affect water quality, spawning habitat, foraging habitat or foraging behavior for bull trout and therefore would have **No Effect** on the Metolius River bull trout population or critical habitat. Adding trees to Suttle Lake would have an overall **Beneficial effect** to bull trout critical habitat but could have a short term disturbance effect lasting a few minutes to half an hour should bull trout be present in close proximity when trees are felled into the lake. Felling trees into Suttle Lake **May Effect**, but is **Not Likely to Adversely Affect** individual bull trout.

Cumulative Effects

Although unlikely, some disturbance to bull trout could occur should they be present in close proximity when trees are felled into Suttle Lake. There are no other Forest Service planned activities in Suttle Lake that could produce a similar disturbance effect within the same time period that the trees would be felled and because of this there would be no cumulative effects.

Determination

No Effect (NE) to the Columbia River bull trout population for the vegetation management portions of the project. The tree felling into Suttle Lake would be a **May Effect Not Likely to Adversely Affect (NLAA)** for bull trout and a **Beneficial Effect (BE)** to bull trout critical habitat. The project will meet NWFP Standards and Guidelines, and all Project Design Criteria.

Biological Evaluation

Interior Columbia Basin Redband Trout- *Oncorhynchus mykiss* Forest Service Region 6 Sensitive Species

Existing Condition

It is thought that redband were native to Suttle Lake (Fies et al. 1996). However stocking of rainbow trout and steelhead occurred in the system as early as the 1920's. Stocking of rainbow trout was discontinued in the 1990's due to poor survival and catch rates. More recent sampling by ODFW in the 1990's did not find any redband trout (Fies et al. 1996). Snorkel surveys conducted by PGE and USFS in 2008 and 2018 in Link Creek did not find any redband trout either. Two trap nets were set for three days in the spring of 2019 by ODFW and only brown trout, kokanee, mountain whitefish and smallmouth bass were captured. Native redband trout

were likely extirpated from the system early on due to overfishing and interactions or diseases from the stocking of many hatchery fish over the years. Currently the lake is not stocked and relies on all natural production of brown trout, kokanee and whitefish. Native populations of longnose dace are also present.

Redband trout (*Oncorhynchus mykiss ssp.*) are found in lower Lake Creek and the Metolius River. The Metolius River population has been increasing in recent years and the adult spawning population has more than tripled in the last five years. The cause of the increase is unknown, but may be the result of recovery after drought, discontinued stocking of hatchery fish and/or increased large wood in the upper river (Mike Riehle, Sisters R.D. Fisheries Biologist, personal communication). Hatchery rainbow trout from Wizard Falls Trout Hatchery were stocked in the Metolius River until 1995 when the program was discontinued to protect wild fish. Some redband trout use the section of Lake Creek from the mouth to the first springs (0.5 miles) as a spawning area with limited spawning occurring higher up to the divergence of the forks (Houslet and Riehle 1997). Spawning starts in lower Lake Creek in March when water temperatures become suitable. Recent redd count data indicates that the adult redband population in the Upper Metolius Watershed is increasing. Numbers of adult spawning redband in the Upper Metolius River have greatly increased since 1995/96 when only 141 redds were counted. In 2017/18 over 1,900 redds were counted, the highest count on record (USFS/ODFW data on file).

Now that instream barriers on Lake Creek have been removed it is possible for redband trout to reoccupy Suttle Lake. However competition and predation from non-native brown trout may be too great and prohibit this from occurring. There have been no anecdotal or other reports that this has occurred yet.

Effects to Redband Trout

Alternative 1 – No Action

There are no expected changes to stream or lakeshore habitat from current conditions. No in-water work will be done and no individuals or habit will be disturbed. However, due to removal of instream barriers during past projects individuals are not limited in their upstream migration from the Metolius River should redband trout decide to utilize the lake in the future.

Alternative 2 – Proposed Action

As mentioned previously redband trout were likely extirpated from the system long ago due to overfishing, stocking of hatchery rainbow trout and predation and competition from brown trout.

Lakeshore habitat will remain relatively unchanged with some trees to be felled and left in the lake and Riparian Reserve near campgrounds and day use areas to provide additional aquatic habitat.

It is highly unlikely that redband trout will be present in Suttle Lake or Link Creek during the project since they have not been documented and recent surveys did not find any but they were presumed a species once native to the lake (Fies et al. 1996). Suttle Lake can now be accessed from the Metolius River redband trout population which has increased in the last twenty years and they have been documented using Lake Creek up to the divergence of the forks. Because redband trout are not currently present and the nearest documented use is several miles downstream of the project in Lake Creek there would be **No Impact** to redband trout for same

reasons mentioned previously for bull trout. If redband trout do reinhabit the lake use would be for foraging since they are not lake spawners. Redband trout could spawn in Link Creek but this has not been documented and snorkel surveys completed along the entire length of Link Creek in 2018 did not find any redband trout or rainbow trout. This project would not negatively affect shoreline habitat and would improve it where trees are felled into the lake to improve fish habitat.

Cumulative Effects

Redband trout are not known to inhabit Suttle Lake area and there are no effects expected from this project on redband trout or their habitat therefore there would be no cumulative effects.

Determination

No Impact (NI) to the Interior Columbia River redband trout population. The project will meet NWFP Standards and Guidelines, and all Project Design Criteria.

A Caddisfly - *Rhyacophila Chandleri*

USFS- Region 6 Sensitive Species

Existing Population and Habitat

This species of caddisfly is known only from Siskiyou Co., California, and Lane and Deschutes counties, Oregon. It is thought to be a rare species that is very patchily distributed, and apparently highly localized where it does occur (Wisseman pers. comm. in USDA and USDI 2005). In the Cascade Mountains of Oregon, this species is associated with very cold, larger spring-fed streams (Wisseman pers. Comm. in USDA and USDI 2005). The most detailed Oregon locality is described as being near the mouth of a very cold creek flowing into a lake, with multiple channels emerging from about six springs about 800 m (0.5 mile) up from the mouth. The main channel at this site was about 3 m (9.8 ft.) wide near the lake, with a moderate to high gradient, dominant cobble and boulder substrates with high sand/gravel embedding, abundant aquatic mosses along margin, moderate bole and branch wood loading, very recent volcanic terrain, and ultra-oligotrophic water. The creek was surrounded by coniferous forest of fir, hemlock, lodge-pole pine, resulting in mostly coniferous detritus in the pools.

Elevations of known populations range from around 1219 to 1700 m (4000 to 5600 ft.) in Oregon. There is no specific information available on threats to this species or its habitat. Activities that degrade water quality or increase water temperatures would likely have negative impacts on this species (USDA and USDI 2005). This species was reportedly collected in 1982 from Tyee Creek near Devils Lake on the Deschutes National Forest, Bend Ranger District (Giersch 2002). This species may exist elsewhere on the forest in headwater spring habitats but sampling for macroinvertebrates has mainly been limited to larger streams and river sections on the Sisters Ranger District and this species was not identified in those samples.

Lake Creek and Link Creek are not directly spring fed and originate from lake surface water in Suttle Lake and Blue Lake that becomes warm in the summer months. The stream that flows out of Dark Lake is intermittent and fed by lake surface waters. There are no known springs or spring fed streams in the project area. It is highly unlikely that a caddisfly would be present at these sites because the habitat and water quality does not meet the requirements described in the *Rhyacophila Chandleri* Species Fact Sheet (USDA and USDI 2005).

Direct/Indirect Effects

Alternative 1 – No Action

There are no expected changes to a caddisfly from current conditions should they be present. No project work would be performed and no individuals or habitat are expected to be present in the project area or in close proximity.

Alternative 2 – Proposed Action

This project would not have any effects on this species. Suitable habitat is not present within or near the project area and this species is not suspected to occur in Suttle Lake, Link Creek, Lake Creek, Dark Lake or Scout Lake because none of these waterbodies meet water quality or habitat requirements described in the *Rhyacophila Chandleri* Species Fact Sheet (USDA and USDI 2005). There would be **No Impact** to a caddisfly or its habitats as a result of this project.

Cumulative Effects

No direct or indirect effects to a caddisfly are anticipated from this project because suitable habitat is not present in the project area or in close proximity therefore there would be no cumulative effects.

Determination

No Impact (NI) to the a caddisfly from this project. The project will meet NWFP Standards and Guidelines, and all Project Design Criteria.

Zigzag darner - *Aeshna sitchensis* USFS- Region 6 Sensitive Species

Existing Population and Habitat from species fact sheet (from Xerces Society 2011)

The distribution of this species in Oregon consists of a narrow band covering the Willamette Valley and Cascade Range (Paulson 2009), with records from Clackamas, Lane, and Deschutes Counties (Abbott 2010, Johnson and Valley 2005). According to Jim Johnson (*pers. comm.* 2010), there haven't been any new localities found for this species in Oregon since 2004, nor have there been any Oregon sightings since that time, although the species is still thought to persist at a sedge meadow near Sparks Lake and was documented at Strider Lake on the Deschutes NF.

Wet sedge meadows, fens, bogs, and very shallow peaty ponds are the reported habitat for this boreal species (Paulson 2009, 2010; Bryan 2010). According to the Wisconsin Odonate Survey website (2010), this species prefers bog pools, ten square yards or less, usually without emergent plants, including pools that dry in the summer. It can also be found in shallow, evenly vegetated sedge/moss fens with puddles (Wisconsin Odonate Survey 2010). Walker (1921) describes one breeding site in British Columbia as a small mossy bog at the foot of a mountain, fed by springs and seepage from a small, cold mountain brook. The bog at this site was partly enclosed by spruce forest and there was practically no aquatic vegetation other than the partly submerged

moss (Walker 1921). The Washington sites range in elevation from 1850 ft. (Fish Lake, Chelan County) to 3500 ft. (South Prairie, Skamania County) to 5000-6000 ft. (northeast Washington) (Paulson 2010). This species co-occurs with *Somatochlora franklini*, *S. whitehousei*, and other *Somatochlora* species at Bunchgrass meadows and other sites (Walker 1921).

Direct/Indirect Effects

Alternative 1 – No Action

There are no expected changes to zigzag darner populations from current conditions since suitable habitat is not suspected within the project area. No in-stream work will be done and no individuals or potential habitat will be disturbed or harmed.

Alternative 2 – Proposed Action

This species has been documented on the Deschutes National Forest at Sparks Lake Meadow and Strider Lake. These sites are at relatively high elevation, with Sparks Lake at 5,440 ft. and Strider Lake at 5,040 ft. Suttle Lake is located at 3,440 ft. in elevation while Dark Lake is located at 3,760 ft. in elevation. Also active management is not proposed in wetlands habitats that are located in this project area. Suitable habitat as described above is not present within the project area. This species is not suspected to occur in this location and there would be **No Impact** to the zigzag darner or its habitat.

Cumulative Effects

No direct or indirect effects to the zigzag darner are anticipated from this project because suitable habitat is not present in the project area or in close proximity therefore no cumulative effects are expected.

Determination

No Impact (NI) - There would be no impact to the zigzag darner from this project.

Summary of the Biological Assessment/Evaluation

Consultation under the Endangered Species Act (ESA) on the effects of this project on listed fish was conducted with the Ochoco and Deschutes NF's Aquatic and Terrestrial Programmatic Biological Assessment (USDA Forest Service 2014) and this Biological Assessment (BA). If the Project Design Criteria (PDC) and Forest Service Best Management Practices (BMPs) are adhered to during the project implementation the following effects determinations apply:

- Bull trout - Vegetation management activities - **No Effect**
- Bull trout – Felling trees into Suttle Lake – **May Effect, Not Likely to Adversely Effect.**
- Bull trout critical habitat- **Beneficial Effect**

The following effects determinations were made in this Biological Evaluation for sensitive aquatic species:

- Redband Trout- **No Impact**
- A Caddisfly – **No Impact**
- Zigzag darter – **No Impact**

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Appendix A. Project Map

